

# Cannabis Production Applications

## Peace of mind. Guaranteed.

### Continuous monitoring of carbon monoxide, combustible gas and carbon dioxide in indoor grow rooms

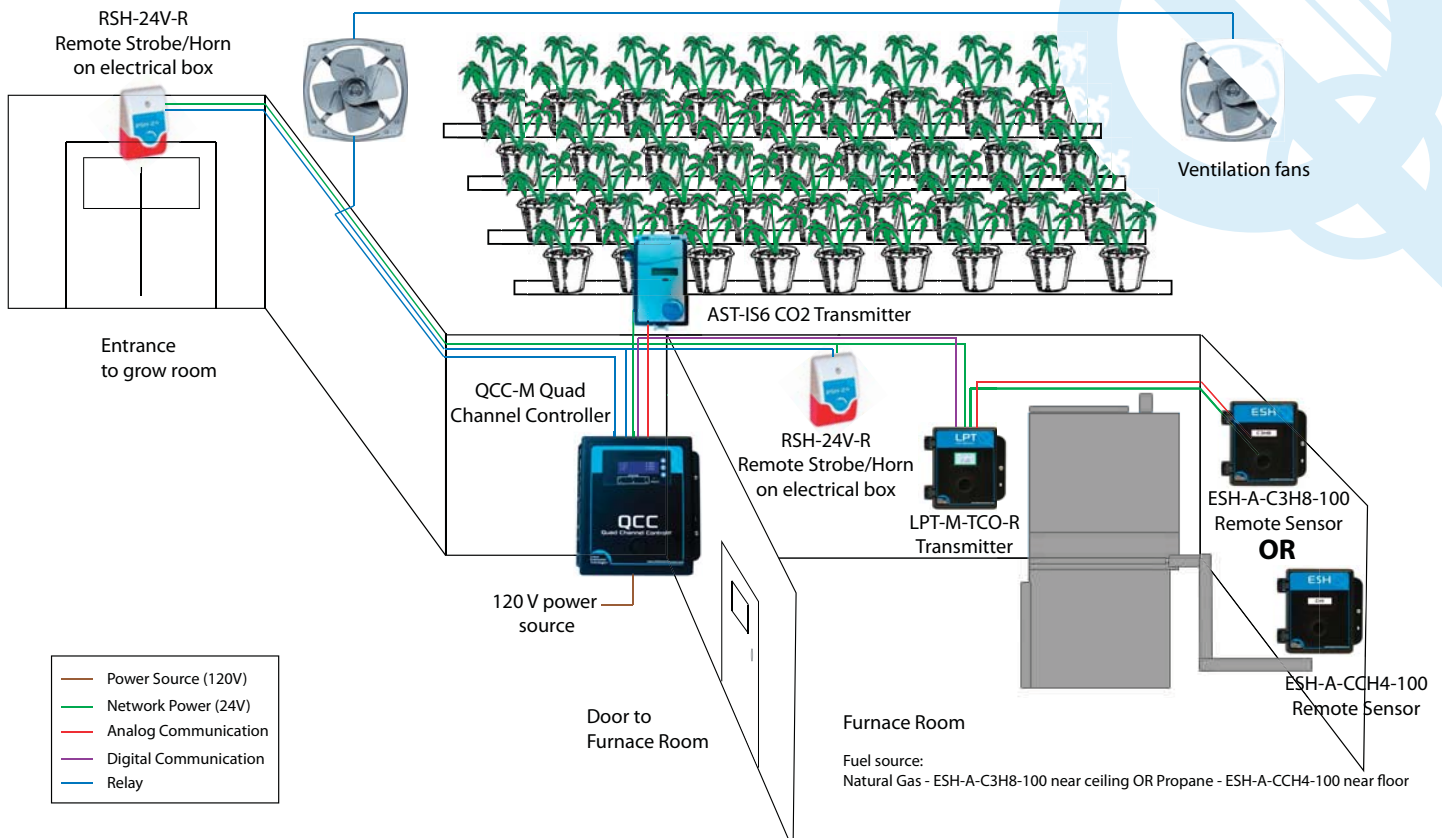
With the recent legalization of marijuana in many North American regions, the cannabis production industry is booming. Greenhouses and other indoor grow rooms provide a structure for growing plants in a controlled environment but can also pose potential hazards to human health. To create favourable growing conditions, reliable heating, cooling and ventilation must be used. Heating may be supplied by sunlight, natural gas, propane gas, fuel oil, wood or electricity. Gas powered equipment may be a source of carbon monoxide if not properly maintained and serviced. Grow lights emit a great deal of heat and can cause combustible gases to ignite. Cooling of the facility is often done by a ventilation system. But there may also be an air conditioning system, which could be a source for refrigerant leaks. Current practices for the commercial cultivation of marijuana and industrial hemp uses Carbon dioxide (CO<sub>2</sub>) enrichment to increase plant growth and development either using cylinders of liquefied compressed gas or a CO<sub>2</sub> generator. CO<sub>2</sub> displaces oxygen and can cause an asphyxiation hazard.

Critical Environment Technologies Canada Inc. (CETCI)'s **QCC** Quad Channel Controller and an **LPT-M** Transmitter with an internal carbon monoxide sensor and an **ESH-A** remote propane (or methane) gas sensor, plus an **AST-IS6** carbon dioxide transmitter is the solution. Each transmitter provides continuous monitoring of the gas levels in the air and is part of the network connected to the **QCC** Controller which in turn can be configured to control equipment to alert and mitigate the hazard.



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## Typical Indoor Grow Room Monitoring System



Two gas detectors should be mounted inside the furnace room - one for monitoring potential leaks in the pipes supplying the gas to the furnace, and the other monitoring carbon monoxide levels generated by the furnace. A well maintained, efficiently burning furnace produces very small amounts of CO, but a dirty, inefficient burning one can produce deadly amounts. To monitor the CO levels, an LPT-M-TCO-R should be mounted inside the furnace room at the “breathing zone” (4 -6 ft from the floor). Connected to the LPT-M-TCO-R would be a remote sensor. If the furnace uses propane, an ESH-A-C3H8-100 remote sensor with an internal propane sensor would be used, mounted 6 inches off the finished floor, close to the pipes supplying the gas to the furnace. If the furnace uses natural gas, an ESH-A-CCH4-100 remote sensor with an internal methane sensor should be used instead, mounted 6 inches from the ceiling above the pipes supplying the gas. Inside the room, there should be an audible/visual alarm device such as the RSH-24V-R Remote Strobe/Horn. Mounted outside the door of the furnace room would be a QCC Quad Channel Controller. If there are additional entrances to the room, each should have a remote visual/audible alarm device outside the door.

Inside the grow room there should be an AST-IS6 carbon dioxide gas detector mounted in the “breathing zone” (4 - 6 ft from the floor) to provide continuous monitoring of CO<sub>2</sub> levels. This is especially important if a CO<sub>2</sub> enrichment practice is used. The standard range for the AST-IS6 is 0 - 2,000 ppm, *unless otherwise specified at time of order to be configured for 0 - 5,000 ppm*. For cannabis production applications, one AST-IS6 configured with a range of 0 - 5,000 ppm covers approximately 743 sq m (8,000 sq ft).

The LPT-M and AST-IS6 will communicate with QCC, which in turn will display their gas level readings, and in the event of a leak / high gas concentration, will provide an audible alarm and control equipment such as the ventilation system, shut off the furnace, trigger the other remote horn/strobe devices or other set responses as configured using its 3 internal relays. The QCC can be ordered with an optional data logging package and it can be configured to communicate with a Building Automation System. The aforementioned gas detectors/sensors are housed in water / dust tight enclosures, and are IP54 rated with the factory installed splash guard, providing protection for the equipment in wet areas.